

REMARKS

The Office Action dated August 8, 2003 has been carefully reviewed. Claims 1, 3-6, 8-14, and 16-33 are pending. Claims 14-15, 28-29, 31-32 and 34-44 have been cancelled. Claims 1, 13, 27, and 33 have been amended. Claim 33 has been made multiple dependent upon all of the remaining independent claims.

Reconsideration of the previous claim rejections is respectfully requested. Applicants thank the Examiner for her thorough and detailed remarks attached to the most recent Office Action.

Applicants believe that the amendments which have been made in response to the Examiner's most recent comments in her Final Rejection of the pending claims, along with the nature of this response have put the remaining claims in condition for allowance. It is therefore specifically and respectfully requested that the Examiner enter and allow the claims as amended herein. In the interests of preserving term for any patent that may be issued on these claims as amended Applicants would like to note the filing of a Notice of Appeal herewith.

CLARIFICATION OF REJECTION TO THE CLAIMS

The Examiner is respectfully asked to clarify the rejection of claim 24. In the text of the August 8, 2003 rejection independent claim 24 is mentioned under the rejections based upon § 103(a). However, the rejections as presented do not seem to specify exactly how the prior cited art renders the full scope of the claim. Clarification and a full enunciation of the rejection is requested.

RESPONSE TO RESTRICTION REQUIREMENT

For purposes of being responsive to the action mailed August 8, 2003, Applicant formally elects the invention of Group I drawn to a method of cryopreserving sperm, without traverse. Applicant agrees that dependant upon the search methodology used the methods of Group I may be distinct from the compositions of Group II with regard to searches of applicable the prior art. The inventions of Group II are cancelled as directed to non-elected subject matter. However,

Applicant respectfully retains their rights with regard to pursuing the non-elected claims in a separate divisional filing.

AMENDMENTS AFTER FINAL REJECTION

This response to the Examiners Final Rejection includes within it amendments to the claims. Amendments such as these can be included within a response to such a Final Rejection if such amendments are made for good and sufficient reasons, as laid out by CFR § 1.116. Justifications for such amendments include: 1) the Applicant's attempt to answer new issues or rejections raised by the Examiner; 2) the amendments reduce the issues to be considered in an appeal; and/or 3) the amendments leave the application in better condition for allowance.

In this instance all possible efforts have been put forward to remove all of the Examiners' rejections to the remaining claims. The pending claims, as amended and provided by Applicant herein, are thus intended to be both part of a fully responsive reply to the Examiner's remaining rejections and fully grounded in the teachings of the specification. MPEP §§ 608.01; 714.

The Applicant believes that the amendments which have been made, along with the nature of this response serve to put all the remaining claims in condition for allowance.

Given the above, it is specifically and respectfully requested that the Examiner allow the amendments after final, made herein.

THE REJECTION UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Claim 28 was rejected under 35 U.S.C. §112, second paragraph for being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. This claim has been cancelled, rendering the instant rejection moot.

THE REJECTION UNDER 35 U.S.C. §103(A)

SU 986411, Sikes et al., Royere et al., and Ahmad et al.,

Claims 1, 3-6, 8-14, 16-26 and 27-33 are rejected under 35 U.S.C. §103(a) as being unpatentable over the SU 986411 reference and the Sikes et al., (U.S. Patent No.# 3,940,943)(hereinafter the '943 patent) in view of Royere et al., and Ahmad et al. (U.S. Patent No.# 3,791,384)(hereinafter the '384 patent) The rejection of the claims, as amended, is respectfully traversed.

As stated previously, the basic considerations which apply to obviousness rejections under MPEP § 2141 are as follows:

- (1) the claimed invention must be considered as a whole;
- (2) the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (3) the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (4) reasonable expectation of success is the standard by which obviousness is determined.

When the prior art itself fails to meet even one of the above criteria the cited art does not satisfy 35 U.S.C. § 103(a) and prevents the establishment of the required *prima facie* case of obviousness by the Examiner. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Rijckaert, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). As pointed out below, the prior art not only fails to provide the suggestion, or incentive to combine but also fails to provide any reasonable expectation of success for the piecemeal combination of the prior art into something resembling the instant invention.

At the outset, it should be noted that each of the remaining independent claims called out by the Examiner has been amended to further delineate the scope of the invention and to remove any ambiguities with regard to intent or grammar. With these changes the Applicants believe that the claims are not obvious in light pursuant to the cited prior art. That is, the limitations of the cited prior art, in particular SU 986411, the '943 patent and Royere et al., have each been

reviewed and the claims as amended include limitations not taught by any of this prior art alone or in combination. (Please see pages 8 and 9 of the Final Rejection of August 8, 2003).

SU 986411

As stated in the last action, the SU 986411 provides some insight into the use of a cryoprotectant buffer and methodology somewhat similar in objective to the current invention, but importantly they differ in methodology used in accomplishing this objective. For example, the concentrations of cryoprotectant components other than glycerol differ in amount and in concentration (e.g., fructose, citric acid, Tris, optimal concentration of egg yolk or the presence of antibiotics). Leading to the new buffer and sperm containing solutions of the invention with different characteristics and advantages and a completely different character. The SU 986411 reference provides: 1) no optimized concentrations; 2) no protocols for mixture, and 3) fails to provide any guidance for the stepwise cooling protocol of the current invention. This lack of guidance, lack of anything resembling “teaching” the invention is clear. Given this, and the controlling precedent cited the SU 986411 reference simply cannot render obvious any of the current independent claims, or those claims that in turn are dependent upon them.

More to the point, the SU 986411 reference simply fails to provide or teach the following elements present in the amended independent claims:

- a) mixing said glycerol and said cooled first sample solution together to comprise a second sample solution;
- b) lowering the temperature of said second sample solution to a second temperature for a sufficient period of time to equilibrate glycerol and sperm.
- c) wherein said second sample solution further comprises an antibiotic compound.
- d) wherein said sperm sample is cooled to said first temperature and maintained at said first temperature for 4 hours to 21 hours.
- e) wherein said second sample solution is allowed to freeze at said second temperature.
- f) the presence of a tris buffer.
- g) the presence of citric acid.
- h) any egg yolk concentration.

- i). any fructose use or concentration.

These deficiencies are not fully remedied through the use of the other citations provided by the Examiner. That is, though the SU 986411 reference and other citations are tasked to providing a solution to the same or similar problem as that faced by the Applicants the cited prior art and the Applicant simply found different methods to solve the problem.

Sikes et al,

Sikes et al., ('943 patent) simply does not provide what SU 986411 lacks. Respectfully, as already stated, Sikes presents the state of the art as of 1975, and does not teach the invention as presented by Applicants. That is, it does not present a cryoprotectant buffer similar to the one employed by the Applicants as found in the amended independent claims. Nor can it teach any combination with SU 986411.

Moreover, the '943 patent states to add the cryoprotectant glycerol immediately after collection of a sperm sample. According to the current invention any glycerol use is added to the sperm sample only it has collected and cooled for 4 to 21 hours. The importance of this is to avoid glycerol toxicity. One measure of the novelty of the current claims is the fact that they overcome the limitations of the past in terms of prior art inefficiencies such as glycerol toxicity. The '943 patent cannot sustain an obviousness rejection alone or in combination due to the many deficiencies in its teachings. Some of these, vis-à-vis the amended independent claims provide:

- a) wherein said sperm sample is cooled to said first temperature and maintained at said first temperature for 4 hours to 21 hours;
- b) wherein said first cryoprotectant solution further comprises an antibiotic compound.
- c) the presence of a tris buffer.
- d) the presence of citric acid.
- e) any egg yolk concentration.

- f) any fructose use or concentration.

This laundry list of deficiencies serves to, respectfully, point out why Sikes is simply inapposite to the current claims and cannot sustain an obviousness rejection. (Please see pages 8 and 9 of the Final Rejection of August 8, 2003).

Thus, amended independent claims 1 and 13 and 27 cannot be obvious over Sikes et al., either alone or in combination with SU 986411 given these remarks and those already provided under the Examiner's anticipation rejections. Likewise those claims dependent upon these independent claims are not obvious due to the above remarks and their own additional limitations.

Royere et al.

Respectfully, it must be reiterated that the Examiner's use of Royere et al. is useful only to point out the weakness of the prior art and the failure of the cited prior art to function together in combination to render the instant claims obvious. Moreover, this citation also simply fails to provide what the SU 986411 and Sikes references lack.

Royere et al., is a review article of the changes in the sperm preservation art over the last several decades. In this sense it catalogs what has gone before and in fact teaches against the methods of both Sikes and SU 986411, describing them as the "old methods" and not "truly rational" (please see, Royere et al., Conclusions p. 557 relevant to anything more than 10 years old in the field, that is, available prior to 1985)(SU 986411 published 1979, and Sikes et al., issued 1975), preventing any combination. Thus, Royere not only teaches away from SU 986411 and Sikes its teachings prevent any combination from being made, and its' own limitations help to underscore the patentability of the current invention. Specifically:

- 1) No mention is made of the cryoprotectant composition provided by the current invention,
- 2) No stepwise cooling system as provided by the claims is presented,
- 3) No selection of antibiotics or concentration of egg yolk is taught.

Rather, Royere et al., simply reviews the field and points out prior deficiencies. The present invention, as recited in amended independent claims 1, 13, and 27 offers the benefits of a novel structural methods and a different cryoprotectant composition. If the invention as recited were obvious, then those skilled in the art would have long since adopted this invention. However, according to the art of record, those skilled in the art have not adopted the present invention, and therefore do not get the benefit of the invention. (Please see pages 8 and 9 of the Final Rejection of August 8, 2003).

It is important to reiterate that the standard for sustaining an obviousness rejection is not whether the methods used in comparison to those disclosed in a given invention are appropriate or mimic the disclosure, but whether there is some quantifiable reason in the cited references or art available generally to the artisan in the field to combine the works to defeat patentability. Indeed, to combine multiple references in an effort to defeat patentability without some objective indicator within the art that such a combination would be appropriate is a classic representation of improper hindsight.

When considering the above rejection which rely on a combination of art it must be remembered that in order for the claims at issue in this appeal to be rendered obvious, there **must be within the art relied upon some suggestion of the desirability of the combination**. That is, the techniques drawn upon by an Inventor to create an otherwise patentable composition of matter or method of production can be considered obvious **only** if the prior art explicitly contained **all** the necessary techniques **and suggested** the combination that would lead to the invention as claimed. Otherwise combining various art with the aid of hindsight is simply improper. In re Dillon, 919 F.2d at 696, 16 USPQ2d at 1904 (Fed. Cir. 1990)(*en banc*); In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). The art presented by the Examiner simply does not accomplish this task, not only because it art cannot be combined, but also because the citations relied upon by the Examiner teach away from the subject matter of the claims, whether taken together or separately.

Given the above, it is proposed that independent claims 1, 13 and 27 and those claims in turn dependent upon them, cannot be obvious.

The dependent claims being dependent upon and further limiting independent amended claims 1, 13, and 27, should also be allowable for that reason, as well as for the additional

recitations they contain. Applicants respectfully request reconsideration of the rejection of the claims under 35 U.S.C. § 103(a) in view of the above amendments and remarks.

New multiple dependent claim 33 has similar limitations to those discussed above, including claim 13 as the case may be. As it retains all the elements of the amended base claims from which it depends it should be allowable for this reason, as well as for the additional recitations it contains. Applicants therefore respectfully request favorable consideration of the claims under 35 U.S.C. § 103(a), in view of the above amendments and remarks.

Ahmad et al.,

The newly presented Ahmad et al., reference does not provide what the above citations lack (United States Patent 3,791,384). As stated by the examiner, this citation is provided to “demonstrate the use of antibiotics..in the solutions in the methods for preserving mammalian sperm.” (Final Rejection of August 8, 2003, page 10). However, before Ahmad can be of use in the list of cited prior art the Examiner must show that the cited artisans showed some indication that the specific features of prior inventions or modifications could or should be combined to better effect. That is, if art is to be combined, the cited art **must** at least indicate that a combination would be possible and desirable in order to render a future combination of that art obvious to one skilled in the relevant field. Ahmad does not do this. For the reasons given above and the fact that the Royere et al., Sikes et al, and SU 986411 references each fail to do this has been made clear. Therefore no combination is possible.

More to the point, the fact that all of the prior art is insufficient to foster the combination means that Ahmad must do this itself. This being the case, the Ahmad et al., reference itself must then present or imply all the features rejected by the Examiner within its four corners. However, the fact is that the rejected features were not so suggested or inferentially implied by this citation, and that, therefore no rejection on the basis of obviousness can be maintained. In re Dillon, 919 F.2d at 696, 16 USPQ2d at 1904 (Fed. Cir. 1990)(*en banc*); In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

The differences between the claimed methods and the Ahmad citation are, as laid out above, substantial and include *several* reasons why no rejections based on this prior art reference render the application obvious or anticipated. With respect to one particular element, Applicant points to the use of tris and/or citric acid in the cryoprotectant buffer. As previously stated, *the*

prima facie case that the Examiner must provide is one of factual, objective evidence. Otherwise the combination is a species of simply improper hindsight and speculation. Dillon; and *see*, In re Chevenard, 139 F.2d 71, 60 USPQ 239 (CCPA 1943)(Appellant reserves the right to challenge any objective evidence presented by the Examiner); 37 CFR § 1.107. Barring such an affirmative assertion the analysis already provided is sufficient to defeat any obviousness rejection.

Applicant does not feel that any fee is necessary for this Response After Final, however, should one be due, the Commissioner is authorized to deduct any necessary fee from GTC Biotherapeutics' Deposit Account No. 502092.

Applicants respectfully submit that the pending claims of this application are in condition for allowance, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicant's attorney would advance the generation of any allowable subject matter, the Examiner is invited to telephone the undersigned at the number given below.

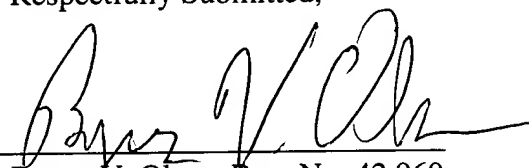
Early and favorable action is earnestly solicited.

Date:

11/25/03

Respectfully Submitted,

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